Ordering number : EN2558A

Monolithic Linear IC

LA7054

Video, Audio Signal Processor for UHF Band RF Modulator

Overview

The LA7054 is a video, audio signal processor IC for UHF band RF modulators. It performs the functions of TSG (test signal generator), video clamp circuit, white clip circuit, audio FM modulator. It is highly stable to supply voltage variations because the LA7054 has an internal voltage regulator.

Functions

- Audio FM modulator
- Sync pulse peak clamp
- TSG
- White clip
- Voltage regulator

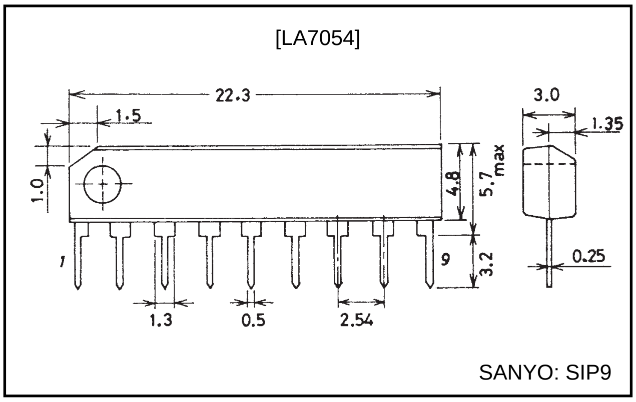
Features

- Low-voltage operation : V_{CC}=5V
- Highly stable to supply voltage variations because the LA7054 has an internal voltage regulator.
- On-chip TSG (test signal generator).
- Good frequency characteristic of white clip.
- Wide amplitude of audio carrier and less high-frequency spurious interference.
- Low audio distortion.
- Low current drain : –30% (compared with our similar ICs).
- Minimum number of parts required : Peripherals of clock oscillator for TSG.
- Small-sized package : 9-pin SIP

Package Dimensions

unit: mm

3017C-SIP9



Specifications

Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		9	V
Allowable power dissipation	Pd max	Ta≤60°C	250	mW
Operating temperature	Topr		–20 to +80	°C
Storage temperature	Tstg		–40 to +125	°C

Operating Conditions at Ta=25°C

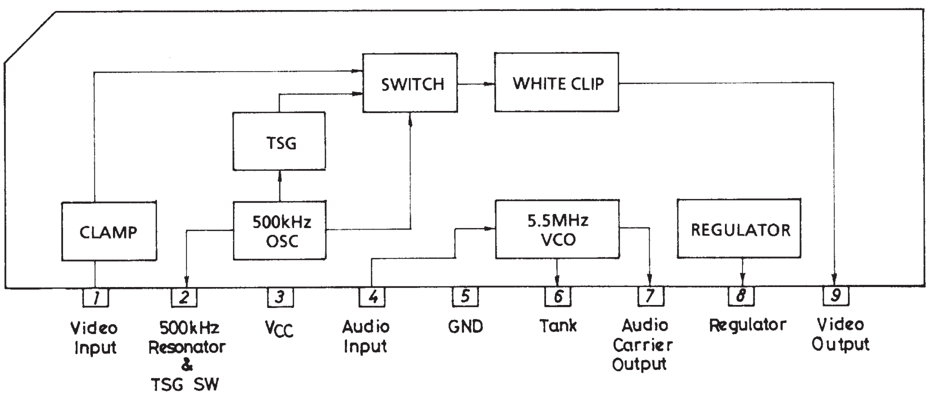
Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		5	V
Operating voltage range	V_{CC} op		4.25 to 7.00	V

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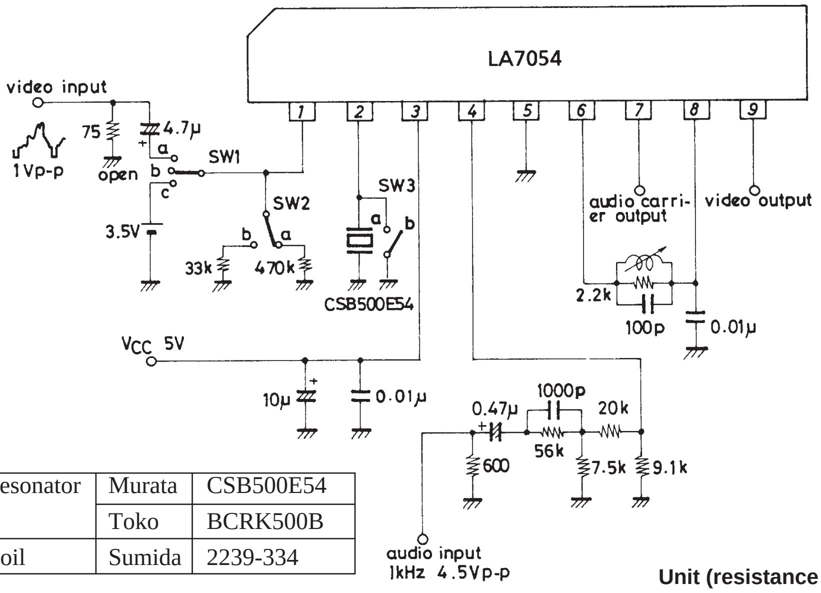
Operating Characteristics at Ta=25°C, V_{CC}=5V

Parameter	Symbol	SW Mode			Conditions	Ratings			Unit
		SW1	SW2	SW3		min	typ	max	
Current drain	I_{CC}	a	a	a		10	14	18	mA
Video clamp voltage	V_{CL}	a	b	a		1.35	1.60	1.85	Vp-p
White clip level	V_{WC}	c	–	a	V_{WC}=V1–V_{CL} V1 : Output voltage	1.10	1.14	1.18	Vp-p
TSG output amplitude	V_{TO}	–	–	b		0.85	1.00	1.15	Vp-p
TSG V/S ratio	V/S	–	–	b		6.0/4.0	6.5/3.5	7.2/2.8	
Horizontal sync signal period	t_S	–	–	b		63.7	64.0	64.3	µs
Horizontal sync signal width	H_S	–	–	b		3.6	4.0	4.4	µs
White signal width	H_V	–	–	b		3.6	4.0	4.4	µs
Sync-1st white signal rise time	t_V1	–	–	b		22	24	26	µs
Sync-2nd white signal rise time	t_V2	–	–	b		38	40	42	µs
Audio carrier amplitude	V_{AO}	–	–	b		1.05	1.30	1.55	Vp-p
Audio modulation degree A	ms	–	–	–	Input signal : 1kHz 4.5Vp-p, ±50kHz : 100%	73	81	89	%
Audio modulation degree B	ms	–	–	–		81	90	99	%
Audio modulation degree C	ms	–	–	–		90	100	110	%
Audio modulation degree D	ms	–	–	–		99	110	121	%
Audio modulation degree E	ms	–	–	–		109	121	133	%
Audio distortion	THD	–	–	–	Same as above	–	0.3	1.5	%

Equivalent Circuit Block Diagram



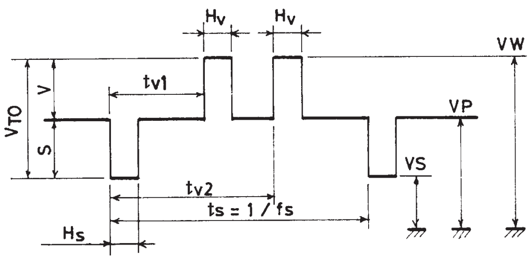
Test Circuit



Ceramic resonator	Murata	CSB500E54
	Toko	BCRK500B
5.5MHz coil	Sumida	2239-334

Unit (resistance : Ω, Capacitance : F)

TSG Output Waveform



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